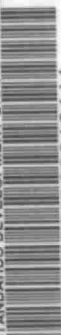


STANDARDS DEVELOPMENT BRANCH OMCE



36936000010111

W.Q. LIB

20 MILE CR. (24)



THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

HAMLET OF MOUNT HOPE

TOWNSHIP OF GLANFORD

1966

TD
380
.M68
1966
MOE

HAMLET OF MOUNT HOPE - 1966
TOWNSHIP OF GLANFORD

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca

TD
380
.M68
1966

Report on a water pollution
survey of the hamlet of Mount
Hope, township of Glanford /
Matwichuk, A.

80322

REPORT

on a

WATER POLLUTION SURVEY

of the

HAMLET OF MOUNT HOPE

Township of Glanford

1966

Division of Sanitary Engineering

By: A. Matwichuk

ONTARIO WATER RESOURCES COMMISSION

REPORT

INTRODUCTION

A water pollution survey was carried out in the hamlet of Mount Hope, Township of Glanford in June of 1966. Such surveys are performed by the Commission routinely, and upon request, in an effort to locate and evaluate existing and potential sources of pollution.

The results of the examination and sampling of local watercourses and sewer outfalls, sampling of individual private wells, and interviews with local officials and individual residents are included in this report.

I GENERAL

The hamlet of Mount Hope is located on Highway 6 in the Township of Glanford, which borders the south limits of the City of Hamilton, and is the commercial centre of the township. Apart from a number of small commercial establishments, the hamlet is basically residential. It has a population of 900.

Drainage in the hamlet is effected by two separate watersheds. The north half is drained into the Twenty Mile Creek watershed and the south half is drained into the Welland River system. The main street of the hamlet, which at one time was Highway 6, before the construction of a by-pass route, is serviced with an 18-inch storm sewer. The remainder of the storm-water drainage is to

roadside ditches.

The Township of Glanford is included in the Hamilton-Wentworth Planning Area. There have been no new subdivisions constructed in Mount Hope since 1959.

II WATER SUPPLY AND USES

1. Type of Systems

The hamlet has no municipal water service. The only piped water supply in the township is a 6-inch-diameter water-main from the City of Hamilton system through Mount Hope to the Hamilton Municipal Airport, located just west of the hamlet. At present there are no connections in the hamlet to this water-main.

The majority of the water supplies are from individual drilled wells. Most of these range in depth from 90 to 150 feet and terminate in the limestone formation. The capacities vary from property to property; some have adequate amounts for domestic use, others do not. It was reported that in some cases there is not enough water to provide for laundering, bathing or even regular flushing of toilets. A number of residents supplement their supplies with rain water from cisterns or have water hauled in.

During the survey, 168 residents were contacted. Approximately one half indicated that they were experiencing shortages of water; the remainder stated that they had adequate amounts for household uses, but were cautious with its use on gardens and lawns. The greatest shortage of water was reported by residents

along Homestead Drive and Airport Road.

2. Water Quality

Bacteriological

A total of 110 water samples was collected for examination at the time of the survey.

The laboratory results revealed that 16.5 per cent of the wells sampled showed contamination. With the exception of the sample collected from a residence on Homestead Drive, the majority of the results showed densities of less than 50 coliforms per 100 ml. It is not conclusive from this survey that the ground water is necessarily polluted, as it is possible that contamination results from faulty well seals or pumping equipment.

Chemical

The results of the chemical analyses as determined by the OWRC laboratory are appended. In general, the ground water in the area is hard, in some cases high in iron, and about 50 per cent of the wells are reported to impart sulphurous taste and odour. Because of severe taste and odour problems in some cases, a number of residents are obtaining water for drinking and cooking purposes from other sources.

III WATER POLLUTION

1. Sanitary Waste Disposal

The disposal of domestic wastes in the hamlet is accomplished by means of individual septic tank systems. Heavy

clay soil conditions limit the effectiveness of such systems, with the result that domestic sewage in some cases is being discharged to the municipal storm drains, and subsequently into the nearby watercourses. This is confirmed by the appended laboratory results of the analyses of samples collected from the storm-sewer outlets and roadside ditches.

The common indicators of domestic wastes are the biological oxygen demand (BOD), suspended solids, anionic detergents (ABS) and coliform organisms. An explanation and the significance of these analyses is provided at the end of the report.

Although the analyses show the presence of domestic pollution, it should be pointed out that the volumes of wastewater encountered were minimal. This may be due, in part, to the limited supply of water available from the private water-supply systems. If an ample supply of water is made available to the community, the problems associated with malfunctioning septic tank systems may be further aggravated.

IV SUMMARY AND CONCLUSIONS

A sanitary survey of the hamlet of Mount Hope in the Township of Glanford was carried out in June 1966. The investigation revealed that the community is principally suffering from a shortage of water. This, in conjunction with unsuitable chemical and bacteriological quality in a number of cases indicates the need for a municipal water-supply system.

Water for the hamlet may be obtained from the City of Hamilton through the purchase of the existing water-main presently serving the Hamilton Municipal Airport. In this case the Township of Glanford would have to purchase the main, which has been offered to the municipality for the price of \$1.00, construct a suitable reservoir and provide a distribution system for the community.

Pollution of the wells by private septic tank systems is not conclusive, but there is a possibility that this is the case. However, domestic waste was found gaining access to the storm sewers and roadside ditches and subsequently to the nearby watercourses. While the pollution did not appear to be widespread, the presence of sewage in ditches in the built-up areas is a potential health hazard, and an effort should be made to correct this situation.

The soil conditions suggest that correction on an individual basis may not solve the problem, particularly if a communal water-supply system is made available. In the event that such a system is provided, consideration should also be given to the provision of a communal sewage collection and treatment system. Any new development proposed in the Mount Hope area should be restricted until municipal services are available.

V RECOMMENDATIONS

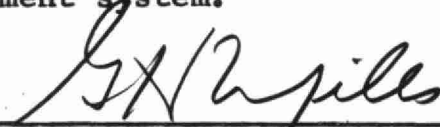
1. The Township of Glanford should proceed with negotiations with the City of Hamilton for the purchase of the water-main which

now services the Hamilton Municipal Airport, make whatever extensions are necessary and arrange to purchase water from the City of Hamilton.

2. Attempts to correct the malfunctioning septic tank systems should be made on an individual basis.

3. If permanent correction cannot be made on an individual basis, the municipality should proceed to construct a communal sewage collection and sewage treatment system.

Approved By:



G.H. Mills, P.Eng.,
District Engineer,
Division of Sanitary Engineering.

/ek

APPENDIX

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

All the laboratory tests included in this report were performed at the Ontario Water Resources Commission Laboratory in Toronto.

A. BACTERIOLOGICAL EXAMINATION

The membrane filter technique is used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in sewage and are generally minimal in other water pollutants.

The results of the examination are reported as "MF Coliform Count per 100 ml".

The Commission's objective for stream water quality is a coliform density of not greater than 2,400 organisms per 100 ml.

B. SANITARY CHEMICAL ANALYSES

BIOCHEMICAL OXYGEN DEMAND (BOD):

Biochemical Oxygen Demand is reported in parts per million (ppm), and is an indication of the amount of oxygen required for the stabilization of decomposable organic matter in the water. The completion of the laboratory test requires 5 days, under the controlled incubation temperature of 20°C.

The Commission's objective for stream water quality is an upper limit of 4 ppm.

SOLIDS:

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analyses in regard to stream water quality.

The effects of suspended solids in water are reflected in difficulties associated with water purification, depositions in streams, and injury to the habitat of fish.

Where suspended solids values are less than 20 ppm laboratory difficulties are experienced and the turbidity is determined instead.

TURBIDITY:

Turbidity is caused by the presence of suspended matter, such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water. It is an expression of the optical property of a sample and results are reported in "Turbidity Units".

ALKYL BENZENE SULFONATE (ABS):

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of household wastes.

TABLE 1

TOWNSHIP OF GLANFORD

MOUNT HOPE - PRIVATE WELLS

LOCATION	DATE	HARDNESS AS CaCO_3 (PPM)	ALKALINITY AS CaCO_3 (PPM)	IRON AS FE (PPM)	CHLORIDE AS CL (PPM)	PH AT LAB.	NITROGEN AS N		SULPHIDE AS H_2S (PPM)	ODOUR ON ARRIVAL	ANIONIC DETERGENTS AS ABS (PPM)
							FREE AMMONIA	NITRATE			
M. VYSE #6 HWY.	MAY 26/66	520	323	0.13	35	7.5	TR.	0.90			
W. BENNICKE ENGLISH CHURCH RD.		1*	67	0.09	3	8.3	TR.	0.56			
MT. HOPE GOLF & COUNTRY CLUB (KITCHEN TAP)		8*	298	0.04	24	7.5	TR.	2.00			
P. HOLTROPS - HOMESTEAD DR.	MAY 30/66	290	278	0.35	55	8.2			0	UNIDENTIFIABLE	
G. BADGEROW - 3314 HOMESTEAD DR.		398	60	0.10	10	8.1			0	SULFURETTED	
W. MORRIS - 3253 HOMESTEAD DR.		448	61	0.21	17	8.0			0	UNIDENTIFIABLE	
MRS. L. DALTON 52 AIRPORT RD.W.	MAY 31/66	70*	63	2.08	4	9.2			0		0.0
R. GUGATT 126 AIRPORT RD.W.		360	59	0.50	8	8.2			0		0.0
MOUNT HOPE PUBLIC SCHOOL AIRPORT RD. W.		304	61	0.08	17	8.2			0		0.0
SOUTH PINES GOLF & COUNTRY CLUB		456	47	0.12	6	8.1			0		0.0
MAX HARRIS 33 AIRPORT RD.E.		372	55	0.35	11	8.0			0		0.1
A.J. KELLY 18 STRATHEARNE PLACE		394	57	0.40	7	8.1			0		0.0

* SAMPLE OBTAINED FOLLOWING WATER-SOFTENING UNIT

TABLE 2

TOWNSHIP OF GLANFORD

MOUNT HOPE - STORM DRAINS

SAMPLE NO.	LOCATION	DATE	5-DAY BOD	SOLIDS			ANIONIC DETERGENTS AS ABS	PHENOLS IN PPB	COLIFORMS PER 100 ML
				TOTAL	SUSP.	DISS.			
PW - 89.2 (W)	STORM SEWER OUTLET, EAST SIDE OF HOMESTEAD ACROSS FROM HYSLOP ELECTRIC	MAY 27/66	8.0	1130	55	1075	0.5	0	3,800
PW - 89.4 (W)	CATCH BASIN AT GAVIN'S CONSTRUCTION		175	1304	276	1028	0.5	-	-
PW - 88.7 (D)	CULVERT AT SOUTH BY-PASS JUNCTION		25	1260	118	1142	1.2	0	1,800
PW - 88.7 (W)	STORM SEWER OUTLET SOUTH BY-PASS WEST SIDE		8.0	1140	18	1086	0.1	0	8,800
PW - 89.0 (W)	ABERDEEN ST. STORM DRAIN	JUNE 1/66	13.	962	40	922	3.0		-
PW - 89.1 (W)	HOMESTEAD DRIVE - SOUTH END - SEWER OUTLET ON EAST SIDE OF STREET		33.	1162	228	934	0.7		-
PW - 88.9 (W)	STRATHEARNE PL. STORM DRAIN		2.1	1206	9	1197	0.2		-
JT - 47.8 (W)	STORM DRAIN AT NORTH HWY. JUNCTION		1.9	1078	5	1073	0.0		-
PW - 86.3	WELLAND RIVER AT CHIPPEWA RD.		2.4	400	7	393	0.0		30,000



LEGEND

- PW-86.3 - STREAM SAMPLING POINT SHOWING MILEAGE
- PW-88.7 - OUTFALL SHOWING STREAM AND MILEAGE
- D - TYPE OF OUTFALL
- D - DRAINAGE OR DITCH
- W - STORM SEWER

ONTARIO WATER RESOURCES COMMISSION

TOWNSHIP OF GLANFORD
MT. HOPE POLLUTION SURVEY
1966

SCALE: 2000 0 2000 4000 FT

DRAWN BY: R. S.

DATE: NOVEMBER 1966

CHECKED BY:

DRAWING NO: 66-75